

3. (a) (i) Calculate the equilibrium price of butter in Country X. [2]

$$Q_D = Q_S$$

$$884 - 6P = 744 + 4P$$

$$10P = 140$$

Any valid working is sufficient for [1]. [1]

$$P = \$14$$

An answer of \$14 or 14 (without workings) is sufficient for [1]. [1]

**N.B.** An answer of 1.4 cents or \$0.014 should be fully rewarded as candidates may have assumed that the price given in the question is per \$000 kg.

- (ii) Calculate the equilibrium quantity per month of butter in Country X. [2]

$$Q = 884 - (6 \times 14) \text{ OR } Q = 744 + (4 \times 14)$$

Any valid working is sufficient for [1]. [1]

$$Q = 800\,000 \text{ kg}$$

An answer of 800 thousand kg or 800 (without workings) is sufficient for [1]. [1]

- (b) State the new equation for demand. [1]

$$Q_D = 894 - 6P$$

- (c) (i) Outline how this change will affect the steepness of the supply curve. [2]

Level

Marks

0 The work does not reach a standard described by the descriptors below. 0

1 The written response is limited. 1

For identifying that the supply curve will become less steep (ie flatter/shallower).

2 The written response is clear. 2

For identifying that the supply curve will become less steep (ie flatter/shallower) because, for any change in price, the change in quantity supplied will be greater, and hence the supply curve will become shallower/flatter.

Full marks may be awarded if a candidate explains that since the slope of the function increases (from +4 to +5) but the axes are reversed (the independent variable is on the vertical) the supply curve will become shallower/flatter.

(ii) Outline why this change will affect the position of the supply curve. [2]

Level	Marks
0 The work does not reach a standard described by the descriptors below.	0
1 The written response is limited. For a response which indicates that the supply curve will shift to the left <b>OR</b> that the quantity supplied has decreased.	1
2 The written response is clear. For a response which indicates that the supply curve will shift to the left because the quantity supplied has decreased.	2

(d) (i) Define the term *price elasticity of supply (PES)*. [2]

Level	Marks
0 The work does not reach a standard described by the descriptors below.	0
1 Vague definition. The idea that price elasticity of supply relates to changes in quantity following a change in price.	1
2 Accurate definition. An explanation that price elasticity of supply is the responsiveness of supply (or, of quantity supplied) to a change in price.	2

The provision of the correct formula is sufficient for [1] only.

$$\frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}$$

(ii) Calculate the PES for butter between the original and the new market price. [2]

$$PES = \frac{\% \Delta Q}{\% \Delta P} = \frac{0.5}{7.14} \quad [1]$$

Any valid working is sufficient for [1].

$$PES = 0.07 \quad [1]$$

An answer of 0.07 is sufficient for [1].

OFR applies

Accurate calculation of at least one percentage is deemed to be sufficient valid working.

**(e) Explain *two* factors that determine the PES of a product.** **[4]**

Level		Marks
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0	<i>The work does not reach a standard described by the descriptors below.</i>	<b>0</b>
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1	<i>The written response is limited.</i> Any two factors expressed in a vague manner <b>OR</b> one factor explained clearly.	<b>1–2</b>
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A candidate who explains one factor in a vague manner may be awarded **[1]**.

2	<i>The written response is clear.</i> Any two factors explained clearly.	<b>3–4</b>
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A candidate who explains one factor clearly and a second factor in a vague manner may be awarded **[3]**.

Factors may include:

- the time period: the longer the time period, the more price elastic supply will be as firms will have more time to adjust to any change in demand / price conditions
- whether the firm has excess (or, unused) capacity available: if it does, then increasing output will be easier so supply will be more price elastic
- possibility of storage: the greater the ability to store stocks, the more price elastic supply will be as firms can draw from stocks to increase the quantity supplied.

Any other valid response.

**(f) Calculate the resulting shortage.** **[1]**

$$\text{Shortage} = Q_D - Q_S = 824 - 784 = 40$$

40 000 kg of butter

*An answer of 40 000 kg (without workings) is sufficient for [1].*

**(g) Calculate the change in consumer expenditure on butter per month resulting from the imposition of the price ceiling.** **[3]**

$$\text{Initial consumer expenditure} = 14 \times 800 = 11\,200$$

*An answer of 11.2 million or 11 200 000 (without workings) is sufficient for [1].*

$$\text{Consumer expenditure with the price ceiling} = 10 \times 784 = 7840$$

*An answer of 7.84 million or 7 840 000 (without workings) is sufficient for [1].*

$$\text{Change in consumer expenditure} = 7840 - 11\,200 = -3\,360\,000 \text{ (a decrease)}$$

*An answer of –\$3.36 million or –\$3 360 000 (without workings) is sufficient for [1].*

OFR applies

- (h) Explain *two* consequences on consumers of butter if a price ceiling (maximum price) is imposed. [4]

Level Marks

0 *The work does not reach a standard described by the descriptors below.* 0

1 *The written response is limited.* 1–2

For any two consequences expressed in a vague manner **OR** one consequence explained clearly.

A candidate who explains one consequence in a vague manner may be awarded [1].

2 *The written response is clear.* 3–4

For any two consequences explained clearly.

A candidate who explains one consequence clearly and a second consequence in a vague manner may be awarded [3].

Consequences on consumers may include:

- some consumers will (benefit as they will) now be able to purchase butter at a lower price
- some consumers will (be worse off as they might) be unable to obtain butter due to the shortage
- some consumers (will be worse off as they) might be forced to purchase butter at a higher price in the underground/parallel market.

Any other valid explanation should be rewarded.

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